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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/913,889	08/17/2001	Toshihide Sekido	360842008200	5982

25227 7590 07/01/2004

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EXAMINER	
STAICOVICI, STEFAN	

ART UNIT	PAPER NUMBER
1732	

DATE MAILED: 07/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/913,889	SEKIDO ET AL.	
	Examiner	Art Unit	
	Stefan Staicovici	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 April 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11 and 14-35* is/are pending in the application.

4a) Of the above claim(s) *18-33* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11,14-17,34 and 35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicants' amendment filed April 19, 2004 has been entered. Claims 1, 3-5, 14 and 35 have been amended. Claims 12-13 have been canceled. No new claims have been added. Claims 1-11 and 14-35 are pending in the instant application.

Claims 18-33 remain withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention. Claims 1-11, 14-17 and 34-35 are being prosecuted in the instant application

Election/Restrictions

2. This application contains claims 18-33 drawn to a non-elected invention. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-5, 10-11, 14 and 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekido *et al.* (US Patent No. 5,960,834) in view of Tunis, III *et al.* (US Patent No. 6,159,414).

Sekido *et al.* ('834) teach the basic claimed process of forming a tubular fiber reinforced article including, providing an expansive tubular mandrel (1) (tubular core), wrapping a layer of fibers (2) and a layer of woven fabric (5) about said mandrel (1) to form a wrapped assembly, placing said wrapped assembly in an air-tight mold (covering), drawing a vacuum onto the interior of said mold, injecting a resin into said mold to impregnate said assembly and curing said assembly to form said tubular fiber reinforced article (see Figure 1 and col. 21, line 21 through col. 22, line 5).

Regarding claim 1, Sekido *et al.* ('834) do not teach a resin distribution medium. Tunis, III *et al.* ('414) teach the claimed process of making a fiber reinforced tubular body including, arranging a resin distribution medium (64) and a fiber reinforced layer (66) about *core faces* (emphasis added) of core (60) (about an entire outer surface of the core) to form a wrapped assembly, covering said wrapped assembly with an airtight covering (68), drawing a vacuum and injecting a resin through said distribution resin medium (64) to impregnate said fiber reinforced layer (66) and produce said fiber reinforced tubular body (see Figures 6 and 7 and, col. 6, lines 18-44). Further, it should be noted that since Tunis, III *et al.* ('414) teach that the "the fiber material may be supplied in a tubular form into which the core is inserted" (see col. 4, lines 21-22), it is submitted that a fiber reinforced tubular plastic body results and that a tubular core is used. It is noted that fitting (72) is a mere component of resin distribution medium (64), hence

providing that said resin distribution medium is wrapped around an "entire outer surface" of said core.

Therefore, it would have been obvious for one of ordinary skill in the art to have provided a resin distribution medium as taught by Tunis, III *et al.* ('414) in the process of Sekido *et al.* ('834) because, Tunis, III *et al.* ('414) specifically teach that a resin distribution medium provides for uniform impregnation and as such improved shear strength of the resulting article (see col. 2, lines 40-55).

In regard to claims 2-4, Tunis, III *et al.* ('414) teach a resin distribution system including large longitudinal groove (14) and a plurality of transversal, smaller grooves (18) (see Figure 1) and a reticulate material (see Figure 6). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a resin distribution medium as taught by Tunis, III *et al.* ('414) in the process of Sekido *et al.* ('834) because, Tunis, III *et al.* ('414) specifically teach that a resin distribution medium provides for uniform impregnation and as such improved shear strength of the resulting article (see col. 2, lines 40-55).

Specifically regarding claim 5, Tunis, III *et al.* ('414) teach a fiber reinforced layer (64) positioned between a resin distribution medium (150) and a core material (60) having resin distribution grooves (see col. 9, lines 18-30). Hence, it is submitted that Tunis, III *et al.* ('414) teach the use of both a reticulate resin distribution medium (150) and resin distribution grooves. Therefore, it would have been obvious for one of ordinary skill in the art to have provided a resin distribution medium (reticulate and grooves) as taught by Tunis, III *et al.* ('414) in the process of Sekido *et al.* ('834) because, Tunis, III *et al.* ('414) specifically teach that a resin distribution

medium provides for uniform impregnation and as such improved shear strength of the resulting article (see col. 2, lines 40-55).

Specifically regarding claim 10, since Tunis, III *et al.* ('414) teach a resin distribution system including large longitudinal groove (14) and a plurality of transversal, smaller grooves (18) (see Figure 1) and a process including drawing a vacuum which forces a resin material to travel through said grooves, it is submitted that said large longitudinal groove also serves as a vacuum suction line in order for the invention of Tunis, III *et al.* ('414) to function as described. Therefore, it would have been obvious for one of ordinary skill in the art to have provided a resin distribution medium that acts as a vacuum channel as taught by Tunis, III *et al.* ('414) in the process of Sekido *et al.* ('834) because, Tunis, III *et al.* ('414) specifically teach that a resin distribution medium provides for uniform impregnation and as such improved shear strength of the resulting article (see col. 2, lines 40-55).

Regarding claim 11 Sekido *et al.* ('834) teach wrapping a layer of fibers (2) and a layer of woven fabric (5) about said mandrel (1).

In regard to claims 14 and 35, Sekido *et al.* ('834) teach applying an internal pressure to expansive tubular mandrel (1). Further, Sekido *et al.* ('834) teach a process for making a curved tubular fiber reinforced plastic body, specifically a tennis racket having a curved portion (frame) and a straight portion (handle) (see Figure 33).

Specifically regarding claim 34, Sekido *et al.* ('834) teaches a woven fabric (5). Further, it is submitted that wrapping occurs with a degree of tension in order to maintain the fiber

reinforced layers about said cores and as such in order for the invention of Sekido *et al.* ('834) in view of Tunis, III *et al.* ('414) to function as described.

5. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekido *et al.* (US Patent No. 5,960,834) in view of Tunis, III *et al.* (US Patent No. 6,159,414) and in further view of McClure *et al.* (US Patent No. 6,090,335).

Sekido *et al.* ('834) in view of Tunis, III *et al.* ('414) teach the basic claimed process as described above.

Regarding claim 6, Sekido *et al.* ('834) in view of Tunis, III *et al.* ('414) do not teach a lengthwise lowermost resin line and an upper most vacuum line in regard to the resin distribution medium. McClure *et al.* ('335) teach a vacuum resin impregnation process including providing a fiber reinforced layer covered by an air-tight vacuum bag, an uppermost vacuum line (30) and a plurality of lowermost resin lines (40), such that as a vacuum is drawn across the inside of the vacuum bag resin is pulled though the fiber reinforced layer (see Figure 2). Therefore, it would have been obvious for on of ordinary skill in the art to have provided a lowermost resin line and an upper most vacuum line as taught by McClure *et al.* ('335) because, McClure *et al.* ('335) specifically teach that such an arrangement provides for resin flow to occur when a vacuum is drawn over the interior of a mold, whereas Sekido *et al.* ('834) teach a mold impregnation process requiring a vacuum be formed while a resin is being distributed, hence in order for the invention of Sekido *et al.* ('834) in view of Tunis, III *et al.* ('414) to function as described.

In regard to claims 7-9, Sekido *et al.* ('834) teach a plurality of resin lines. Further, Sekido *et al.* ('834) teach that the number and position of the resin lines can be used to optimize

the molding conditions and that the resin line and the vacuum line are interchangeable (see col. 23, line 61 through col. 24, line 4). It is submitted that the number and position of the resin and vacuum lines is a mere result-effective variable. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). Therefore, it would have been obvious for one of ordinary skill in the art to have used routine experimentation to determine the number and position of the vacuum and resin lines in the process of Sekido *et al.* ('834) in view of Tunis, III *et al.* ('414) and in further view of McClure *et al.* ('335) because, Sekido *et al.* ('834) specifically teach that the number and position of the resin lines can be used to optimize the molding conditions.

6. Claims 1-5, 10-11, 15-16 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tunis, III *et al.* (US Patent No. 6,159,414) in view of Sekido *et al.* (US Patent No. 5,960,834).

Tunis, III *et al.* ('414) teach the claimed process of making a fiber reinforced tubular body including, arranging a resin distribution medium (64) and a fiber reinforced layer (66) about *core faces* (emphasis added) of core (60) (about an entire outer surface of the core) see (Figures 7, 14 and 16A) to form a wrapped assembly, covering said wrapped assembly with an airtight covering (68), drawing a vacuum and injecting a resin through said distribution resin medium (64) to impregnate said fiber reinforced layer (66) and produce said fiber reinforced tubular body (see Figures 6 and 7 and, col. 6, lines 18-44). Further, it should be noted that since Tunis, III *et al.* ('414) teach that the "the fiber material may be supplied in a tubular form into which the core is inserted" (see col. 4, lines 21-22), it is submitted that a fiber reinforced tubular plastic body results and that a tubular core is used. It is noted that fitting (72) is a mere

component of resin distribution medium (64), hence providing that said resin distribution medium is wrapped around an "entire outer surface" of said core.

Regarding claim 1, although Tunis, III *et al.* ('414) teach that "the fiber material may be supplied in a tubular form into which the core is inserted" (see col. 4, lines 21-22), Tunis, III *et al.* ('414) do not specifically teach a tubular fiber reinforced object. Sekido *et al.* ('834) teach a process of forming a tubular fiber reinforced article including, providing an expansive tubular mandrel (1) (tubular core), wrapping a layer of fibers (2) and a layer of woven fabric (5) about said mandrel (1) to form a wrapped assembly, placing said wrapped assembly in an air-tight mold (covering), drawing a vacuum onto the interior of said mold, injecting a resin into said mold to impregnate said assembly and curing said assembly to form said tubular fiber reinforced article (see Figure 1 and col. 21, line 21 through col. 22, line 5). Therefore, it would have been obvious for one of ordinary skill in the art to have formed a tubular fiber reinforced object as taught by Sekido *et al.* ('834) using the process of Tunis, III *et al.* ('414) because Tunis, III *et al.* ('414) specifically suggests teach that "the fiber material may be supplied in a tubular form into which the core is inserted" and also because both references teach similar materials and processes.

In regard to claims 2-4, Tunis, III *et al.* ('414) teach a resin distribution system including a large longitudinal groove (14) and a plurality of transversal, smaller grooves (18) (see Figure 1) and a reticulate material (see Figure 6) (see col. 2, lines 40-55).

Specifically regarding claim 5, Tunis, III *et al.* ('414) teach a fiber reinforced layer (64) positioned between a resin distribution medium (150) and a core material (60) having resin

distribution grooves (see col. 9, lines 18-30). Hence, it is submitted that Tunis, III *et al.* ('414) teach the use of both a reticulate resin distribution medium (150) and resin distribution grooves.

Specifically regarding claim 10, since Tunis, III *et al.* ('414) teach a resin distribution system including large longitudinal groove (14) and a plurality of transversal, smaller grooves (18) (see Figure 1) and a process including drawing a vacuum which forces a resin material to travel through said grooves, it is submitted that said large longitudinal groove also serves as a vacuum suction line in order for the invention of Tunis, III *et al.* ('414) in view of Sekido *et al.* ('834) to function as described.

Regarding claim 11 Sekido *et al.* ('834) teach wrapping a layer of fibers (2) and a layer of woven fabric (5) about said mandrel (1). Therefore, it would have been obvious for one of ordinary skill in the art to have formed a tubular fiber reinforced object as taught by Sekido *et al.* ('834) using the process of Tunis, III *et al.* ('414) because Tunis, III *et al.* ('414) specifically suggests teach that "the fiber material may be supplied in a tubular form into which the core is inserted" and also because both references teach similar materials and processes.

In regard to claims 15-16 and 34, Tunis, III *et al.* ('414) teach wrapping said fiber reinforcement layers (66) around a plurality of tubular cores and integrating said wrapped separate cores into an integral boat hull (circumferential direction). Further regarding claim 34, Sekido *et al.* ('834) teaches a woven fabric (5). It is submitted that wrapping occurs with a degree of tension in order to maintain the fiber reinforced layers about said cores and as such in order for the invention of Tunis, III *et al.* ('414) in view of Sekido *et al.* ('834) to function as described. Further, it should be noted that Tunis, III *et al.* ('414) specifically teach that the cores

may take any shape and be arranged in any suitable pattern, hence a circumferential pattern, since a boat hull is fabricated.

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tunis, III *et al.* (US Patent No. 6,159,414) in view of Sekido *et al.* (US Patent No. 5,960,834 and in further view of Nakamura (US Patent No. 6,350,337 B1).

Tunis, III *et al.* ('414) in view of Sekido *et al.* ('834) teach the basic claimed process as described above.

Regarding claim 17, Tunis, III *et al.* ('414) in view of Sekido *et al.* ('834) do not teach a connecting member. However, the use of connecting members to form a complex shaped article is well known the art as evidenced by Nakamura ('337) that teaches a process for molding tubular fiber reinforced articles including a plurality of cores wrapped with fiber reinforced material, placing said wrapped cores into a mold, injecting resin into said mold and curing said resin to form a tubular fiber reinforced article, wherein said plurality of cores are connected by connecting members (122) (see Figure 14). Therefore, it would have been obvious for one of ordinary skill in the art to have provided connecting members to connect a plurality of cores as taught by Nakamura ('337) in the process of Tunis, III *et al.* ('414) in view of Sekido *et al.* ('834) due to a variety of advantages such as increased versatility by obtaining complex shapes and also because Tunis, III *et al.* ('414) specifically teach molding a plurality of tubular cores into an integral article, whereas Nakamura ('337) teach connecting a plurality of cores in order to obtain a complex molded shape.

8. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tunis, III *et al.* (US Patent No. 6,159,414) in view of Sekido *et al.* (US Patent No. 5,960,834 and in further view of McClure *et al.* (US Patent No. 6,090,335).

Tunis, III *et al.* ('414) in view of Sekido *et al.* ('834) teach the basic claimed process as described above.

Regarding claim 6, Tunis, III *et al.* ('414) in view of Sekido *et al.* ('834) do not teach a lengthwise lowermost resin line and an upper most vacuum line in regard to the resin distribution medium. McClure *et al.* ('335) teach a vacuum resin impregnation process including providing a fiber reinforced layer covered by an air-tight vacuum bag, an uppermost vacuum line (30) and a plurality of lowermost resin lines (40), such that as a vacuum is drawn across the inside of the vacuum bag resin is pulled though the fiber reinforced layer (see Figure 2). Therefore, it would have been obvious for on of ordinary skill in the art to have provided a lowermost resin line and an upper most vacuum line as taught by McClure *et al.* ('335) in the process of Tunis, III *et al.* ('414) in view of Sekido *et al.* ('834) because, McClure *et al.* ('335) specifically teach that such an arrangement provides for resin flow to occur when a vacuum is drawn over the interior of a mold, whereas Sekido *et al.* ('834) teach a mold impregnation process requiring a vacuum be formed while a resin is being distributed, hence in order for the invention of Tunis, III *et al.* ('414) in view of Sekido *et al.* ('834) to function as described.

In regard to claims 7-9, Sekido *et al.* ('834) teach a plurality of resin lines. Further, Sekido *et al.* ('834) teach that the number and position of the resin lines can be used to optimize the molding conditions and that the resin line and the vacuum line are interchangeable (see col.

23, line 61 through col. 24, line 4). It is submitted that the number and position of the resin and vacuum lines is a mere result-effective variable. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). Therefore, it would have been obvious for one of ordinary skill in the art to have used routine experimentation to determine the number and position of the vacuum and resin lines in the process of Tunis, III *et al.* ('414) in view of Sekido *et al.* ('834) and in further view of McClure *et al.* ('335) because, Sekido *et al.* ('834) specifically teach that the number and position of the resin lines can be used to optimize the molding conditions.

Response to Arguments

9. Applicants' remarks filed April 19, 2004 have been considered.

Applicants argue that the prior art does not teach or suggest applying a distribution medium to the "entire surface of the core" (see page 7 of the amendment filed April 19, 2004). However, as shown above, in col. 6, lines 12-16 of Tunis, III *et al.* ('414), it is taught that the distribution medium (64) is provided adjacent the "core faces." Hence, it is submitted that the "core faces" requires that the distribution medium be wrapped around the *entire* core because the core includes all of its "core faces." Further, although Tunis, III *et al.* ('414) shows in Figure 7 that the distribution medium (64) does not cover the main feeder channel at the top of the core, it is noted that this is a cross-sectional drawing that does not include the entire length of the structure. Furthermore, it is noted that the main feeder channel (62) on the bottom of the core is covered by the resin distribution medium (64) and as such it can still function as a main feeder groove although it is covered by the resin distribution medium.

Under MPEP §2125, the "drawings must be evaluated for what they reasonably disclose and suggest to one of ordinary skill in the art." In re Aslanian, 590 F.2d 911, 200 USPQ 500 (CCPA 1979). Further, it is noted that under MPEP §2145(III), the "'test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.... Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art." In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). Therefore, it is submitted that "to those of ordinary skill in the art," Tunis, III *et al.* ('414) in Figure 7 and the teachings that the distribution medium (64) is provided adjacent the "core faces," would teach as a whole that the distribution medium is applied to the "entire surface of the core."

Furthermore, in Figure 7 of Tunis, III *et al.* ('414), the resin distribution medium (64) covering the top of the core (60) is interrupted by fitting (72) that distributes resin. It is submitted that fitting (72) is a component of resin distribution medium (64). Due to the use of the "transitional term 'comprising'...additional, unrecited elements or method steps" are not excluded. See, e.g., Genentech, Inc. v. Chiron Corp., 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997). As such, the use of fitting (72) is a mere component of resin distribution medium (64).

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Staicovici, Ph.D. whose telephone number is (571) 272-1208. The examiner can normally be reached on Monday-Friday 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael P. Colaianni, can be reached on (571) 272-1196. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stefan Staicovici, PhD

Primary Examiner

6/28/04

AU 1732

June 28, 2004